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15 MAY 2002

#6

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent application

Appl'n. No. : 10/031,165  
Filed : N/A  
Applicant : Sheena M. Loosmore, et al.  
Title : RECOMBINANT HIGH MOLECULAR WEIGHT MAJOR  
OUTER MEMBRANE PROTEIN OF MORAXELLA  
Docket No. : 1038-1217 MIS:sd

May 13, 2002

**BY COURIER**

The Commissioner of Patents  
and Trademarks,  
Washington, D.C. 20231,  
U.S.A.

**VOLUNTARY AMENDMENT**

Sir:

Please amend this application in the following manner:

**In the disclosure:**

Add the enclosed Sequence Listing following page 55 and immediately  
preceding the claims.

**REMARKS**

The Sequence Listing is inserted into the specification hereby.

Respectfully submitted,  
SIM & McBURNEY

Michael I. Stewart  
Reg. No. 24,973

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# SEQUENCE LISTING

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SASAKI, Ken  
YANG, Yan-Ping  
KLEIN, Michel H.

<120> RECOMBINANT HIGH MOLECULAR WEIGHT MAJOR OUTER MEMBRANE  
PROTEIN OF MORAXELLA

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<150> 09/361,619

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<150> PCT/CA00/00870

<151> 2000-07-26

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Ala Thr Thr Ala Lys Val Thr Tyr Asp Asp Thr Ser Lys Thr Ser Lys  
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&lt;213&gt; Moraxella catarrhalis



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<210> 38  
<211> 4  
<212> PRT  
<213> Moraxella catarrhalis

<400> 38  
Gly Val Val Lys  
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<210> 39  
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<400> 39  
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<210> 40

<211> 5  
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<400> 40  
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<210> 42  
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<400> 42  
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<210> 43  
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<400> 43  
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<210> 44  
 <211> 9  
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 <213> Moraxella catarrhalis

<400> 44  
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<210> 45  
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 <213> Moraxella catarrhalis

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 caatcagggtg agattgccca aaacagccat gatgctgtga caggcggcaa gatttatgat 360

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&lt;210&gt; 46

&lt;211&gt; 1044

&lt;212&gt; PRT

&lt;213&gt; Moraxella catarrhalis

&lt;400&gt; 46

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1

5

10

15

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 Ser Glu Gln Ile Gln Val Gly Ala Asp Gly Val Lys Phe Ala Lys Val  
 35 40 45  
 Asn Asn Asn Gly Val Val Gly Ala Gly Ile Asp Gly Thr Thr Arg Ile  
 50 55 60  
 Thr Arg Asp Glu Ile Gly Phe Thr Gly Thr Asn Gly Ser Leu Asp Lys  
 65 70 75 80  
 Ser Lys Pro His Leu Ser Lys Asp Gly Ile Asn Ala Gly Gly Lys Lys  
 85 90 95  
 Ile Thr Asn Ile Gln Ser Gly Glu Ile Ala Gln Asn Ser His Asp Ala  
 100 105 110  
 Val Thr Gly Gly Lys Ile Tyr Asp Leu Lys Thr Glu Leu Glu Asn Lys  
 115 120 125  
 Ile Ser Ser Thr Ala Lys Thr Ala Gln Asn Ser Leu His Glu Phe Ser  
 130 135 140  
 Val Ala Asp Glu Gln Gly Asn Asn Phe Thr Val Ser Asn Pro Tyr Ser  
 145 150 155 160  
 Ser Tyr Asp Thr Ser Lys Thr Ser Asp Val Ile Thr Phe Ala Gly Glu  
 165 170 175  
 Asn Gly Ile Thr Thr Lys Val Asn Lys Gly Val Val Arg Val Gly Ile  
 180 185 190  
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 Asn Gly Lys Gly Ile Val Ile Asp Ser Gln Asn Gly Gln Asn Thr Ile  
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 Thr Gly Leu Ser Asn Thr Leu Ala Asn Val Thr Asn Asp Lys Gly Ser  
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 Val Arg Thr Thr Glu Gln Gly Asn Ile Ile Lys Asp Glu Asp Lys Thr  
 245 250 255  
 Arg Ala Ala Ser Ile Val Asp Val Leu Ser Ala Gly Phe Asn Leu Gln  
 260 265 270  
 Gly Asn Gly Glu Ala Val Asp Phe Val Ser Thr Tyr Asp Thr Val Asn  
 275 280 285  
 Phe Ala Asp Gly Asn Ala Thr Thr Ala Lys Val Thr Tyr Asp Asp Thr  
 290 295 300  
 Ser Lys Thr Ser Lys Val Val Tyr Asp Val Asn Val Asp Asp Thr Thr  
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 Ile Glu Val Lys Asp Lys Lys Leu Gly Val Lys Thr Thr Thr Leu Thr  
 325 330 335

Ser Thr Gly Thr Gly Ala Asn Lys Phe Ala Leu Ser Asn Gln Ala Thr  
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 Gly Asp Ala Leu Val Lys Ala Ser Asp Ile Val Ala His Leu Asn Thr  
 355 360 365  
 Leu Ser Gly Asp Ile Gln Thr Ala Lys Gly Ala Ser Gln Ala Asn Asn  
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 Ser Ala Gly Tyr Val Asp Ala Asp Gly Asn Lys Val Ile Tyr Asp Ser  
 385 390 395 400  
 Thr Asp Asn Lys Tyr Tyr Gln Ala Lys Asn Asp Gly Thr Val Asp Lys  
 405 410 415  
 Thr Lys Glu Val Ala Lys Asp Lys Leu Val Ala Gln Ala Gln Thr Pro  
 420 425 430  
 Asp Gly Thr Leu Ala Gln Met Asn Val Lys Ser Val Ile Asn Lys Glu  
 435 440 445  
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 450 455 460  
 Phe Val Lys Gly Leu Glu Lys Ala Ala Ser Asp Asn Lys Thr Lys Asn  
 465 470 475 480  
 Ala Ala Val Thr Val Gly Asp Leu Asn Ala Val Ala Gln Thr Pro Leu  
 485 490 495  
 Thr Phe Ala Gly Asp Thr Gly Thr Thr Ala Lys Lys Leu Gly Glu Thr  
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 515 520 525  
 Asn Ile Gly Val Val Ala Gly Thr Asp Gly Phe Thr Val Lys Leu Ala  
 530 535 540  
 Lys Asp Leu Thr Asn Leu Asn Ser Val Asn Ala Gly Gly Thr Lys Ile  
 545 550 555 560  
 Asp Asp Lys Gly Val Ser Phe Val Asp Ser Ser Gly Gln Ala Lys Ala  
 565 570 575  
 Asn Thr Pro Val Leu Ser Ala Asn Gly Leu Asp Leu Gly Gly Lys Val  
 580 585 590  
 Ile Ser Asn Val Gly Lys Gly Thr Lys Asp Thr Asp Ala Ala Asn Val  
 595 600 605  
 Gln Gln Leu Asn Glu Val Arg Asn Leu Leu Gly Leu Gly Asn Ala Gly  
 610 615 620  
 Asn Asp Asn Ala Asp Gly Asn Gln Val Asn Ile Ala Asp Ile Lys Lys  
 625 630 635 640



Asp Pro Asn Ser Gly Ser Ser Ser Asn Arg Thr Val Ile Lys Ala Gly  
 645 650 655  
 Thr Val Leu Gly Gly Lys Gly Asn Asn Asp Thr Glu Lys Leu Ala Thr  
 660 665 670  
 Gly Gly Ile Gln Val Gly Val Asp Lys Asp Gly Asn Ala Asn Gly Asp  
 675 680 685  
 Leu Ser Asn Val Trp Val Lys Thr Gln Lys Asp Gly Ser Lys Lys Ala  
 690 695 700  
 Leu Leu Ala Thr Tyr Asn Ala Ala Gly Gln Thr Asn Tyr Leu Thr Asn  
 705 710 715 720  
 Asn Pro Ala Glu Ala Ile Asp Arg Ile Asn Glu Gln Gly Ile Arg Phe  
 725 730 735  
 Phe His Val Asn Asp Gly Asn Gln Glu Pro Val Val Gln Gly Arg Asn  
 740 745 750  
 Gly Ile Asp Ser Ser Ala Ser Gly Lys His Ser Val Ala Ile Gly Phe  
 755 760 765  
 Gln Ala Lys Ala Asp Gly Glu Ala Ala Val Ala Ile Gly Arg Gln Thr  
 770 775 780  
 Gln Ala Gly Asn Gln Ser Ile Ala Ile Gly Asp Asn Ala Gln Ala Thr  
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 Gly Asp Gln Ser Ile Ala Ile Gly Thr Gly Asn Val Val Ala Gly Lys  
 805 810 815  
 His Ser Gly Ala Ile Gly Asp Pro Ser Thr Val Lys Ala Asp Asn Ser  
 820 825 830  
 Tyr Ser Val Gly Asn Asn Asn Gln Phe Thr Asp Ala Thr Gln Thr Asp  
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 Val Phe Gly Val Gly Asn Asn Ile Thr Val Thr Glu Ser Asn Ser Val  
 850 855 860  
 Ala Leu Gly Ser Asn Ser Ala Ile Ser Ala Gly Thr His Ala Gly Thr  
 865 870 875 880  
 Gln Ala Lys Lys Ser Asp Gly Thr Ala Gly Thr Thr Thr Thr Ala Gly  
 885 890 895  
 Ala Thr Gly Thr Val Lys Gly Phe Ala Gly Gln Thr Ala Val Gly Ala  
 900 905 910  
 Val Ser Val Gly Ala Ser Gly Ala Glu Arg Arg Ile Gln Asn Val Ala  
 915 920 925  
 Ala Gly Glu Val Ser Ala Thr Ser Thr Asp Ala Val Asn Gly Ser Gln  
 930 935 940  
 Leu Tyr Lys Ala Thr Gln Ser Ile Ala Asn Ala Thr Asn Glu Leu Asp  
 945 950 955 960

His Arg Ile His Gln Asn Glu Asn Lys Ala Asn Ala Gly Ile Ser Ser  
 965 970 975

Ala Met Ala Met Ala Ser Met Pro Gln Ala Tyr Ile Pro Gly Arg Ser  
 980 985 990

Met Val Thr Gly Gly Ile Ala Thr His Asn Gly Gln Gly Ala Val Ala  
 995 1000 1005

Val Gly Leu Ser Lys Leu Ser Asp Asn Gly Gln Trp Val Phe Lys Ile  
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Asn Gly Ser Ala Asp Thr Gln Gly His Val Gly Ala Ala Val Gly Ala  
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Gly Phe His Phe

<210> 47

<211> 2448

<212> DNA

<213> *Moraxella catarrhalis*

<400> 47

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gatggcgtga agtttgccaa ggttaataat aatggtggtg taggtgctgg cattgatggc 180
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gacccaaatt caggttcac atctaaccgc actgtcatca aagcaggcac ggtacttggc 1980

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<210> 48

<211> 816

<212> PRT

<213> Moraxella catarrhalis

<400> 48

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Ser Glu Gln Ile Gln Val Gly Ala Asp Gly Val Lys Phe Ala Lys Val
          35          40          45

Asn Asn Asn Gly Val Val Gly Ala Gly Ile Asp Gly Thr Thr Arg Ile
          50          55          60

Thr Arg Asp Glu Ile Gly Phe Thr Gly Thr Asn Gly Ser Leu Asp Lys
          65          70          75          80

Ser Lys Pro His Leu Ser Lys Asp Gly Ile Asn Ala Gly Gly Lys Lys
          85          90          95

Ile Thr Asn Ile Gln Ser Gly Glu Ile Ala Gln Asn Ser His Asp Ala
          100          105          110

Val Thr Gly Gly Lys Ile Tyr Asp Leu Lys Thr Glu Leu Glu Asn Lys
          115          120          125

Ile Ser Ser Thr Ala Lys Thr Ala Gln Asn Ser Leu His Glu Phe Ser
          130          135          140

Val Ala Asp Glu Gln Gly Asn Asn Phe Thr Val Ser Asn Pro Tyr Ser
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Ser Tyr Asp Thr Ser Lys Thr Ser Asp Val Ile Thr Phe Ala Gly Glu
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Asn Gly Ile Thr Lys Val Asn Lys Gly Val Val Arg Val Gly Ile
          180          185          190

Asp Gln Thr Lys Gly Leu Thr Thr Pro Lys Leu Thr Val Gly Asn Asn
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Asn Gly Lys Gly Ile Val Ile Asp Ser Gln Asn Gly Gln Asn Thr Ile
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 260 265 270  
 Gly Asn Gly Glu Ala Val Asp Phe Val Ser Thr Tyr Asp Thr Val Asn  
 275 280 285  
 Phe Ala Asp Gly Asn Ala Thr Thr Ala Lys Val Thr Tyr Asp Asp Thr  
 290 295 300  
 Ser Lys Thr Ser Lys Val Val Tyr Asp Val Asn Val Asp Asp Thr Thr  
 305 310 315 320  
 Ile Glu Val Lys Asp Lys Lys Leu Gly Val Lys Thr Thr Thr Leu Thr  
 325 330 335  
 Ser Thr Gly Thr Gly Ala Asn Lys Phe Ala Leu Ser Asn Gln Ala Thr  
 340 345 350  
 Gly Asp Ala Leu Val Lys Ala Ser Asp Ile Val Ala His Leu Asn Thr  
 355 360 365  
 Leu Ser Gly Asp Ile Gln Thr Ala Lys Gly Ala Ser Gln Ala Asn Asn  
 370 375 380  
 Ser Ala Gly Tyr Val Asp Ala Asp Gly Asn Lys Val Ile Tyr Asp Ser  
 385 390 395 400  
 Thr Asp Asn Lys Tyr Tyr Gln Ala Lys Asn Asp Gly Thr Val Asp Lys  
 405 410 415  
 Thr Lys Glu Val Ala Lys Asp Lys Leu Val Ala Gln Ala Gln Thr Pro  
 420 425 430  
 Asp Gly Thr Leu Ala Gln Met Asn Val Lys Ser Val Ile Asn Lys Glu  
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 Gln Val Asn Asp Ala Asn Lys Lys Gln Gly Ile Asn Glu Asp Asn Ala  
 450 455 460  
 Phe Val Lys Gly Leu Glu Lys Ala Ala Ser Asp Asn Lys Thr Lys Asn  
 465 470 475 480  
 Ala Ala Val Thr Val Gly Asp Leu Asn Ala Val Ala Gln Thr Pro Leu  
 485 490 495  
 Thr Phe Ala Gly Asp Thr Gly Thr Thr Ala Lys Lys Leu Gly Glu Thr  
 500 505 510  
 Leu Thr Ile Lys Gly Gly Gln Thr Asp Thr Asn Lys Leu Thr Asp Asn  
 515 520 525  
 Asn Ile Gly Val Val Ala Gly Thr Asp Gly Phe Thr Val Lys Leu Ala  
 530 535 540

Lys Asp Leu Thr Asn Leu Asn Ser Val Asn Ala Gly Gly Thr Lys Ile  
 545 550 555 560  
 Asp Asp Lys Gly Val Ser Phe Val Asp Ser Ser Gly Gln Ala Lys Ala  
 565 570 575  
 Asn Thr Pro Val Leu Ser Ala Asn Gly Leu Asp Leu Gly Gly Lys Val  
 580 585 590  
 Ile Ser Asn Val Gly Lys Gly Thr Lys Asp Thr Asp Ala Ala Asn Val  
 595 600 605  
 Gln Gln Leu Asn Glu Val Arg Asn Leu Leu Gly Leu Gly Asn Ala Gly  
 610 615 620  
 Asn Asp Asn Ala Asp Gly Asn Gln Val Asn Ile Ala Asp Ile Lys Lys  
 625 630 635 640  
 Asp Pro Asn Ser Gly Ser Ser Ser Asn Arg Thr Val Ile Lys Ala Gly  
 645 650 655  
 Thr Val Leu Gly Gly Lys Gly Asn Asn Asp Thr Glu Lys Leu Ala Thr  
 660 665 670  
 Gly Gly Ile Gln Val Gly Val Asp Lys Asp Gly Asn Ala Asn Gly Asp  
 675 680 685  
 Leu Ser Asn Val Trp Val Lys Thr Gln Lys Asp Gly Ser Lys Lys Ala  
 690 695 700  
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 Asn Pro Ala Glu Ala Ile Asp Arg Ile Asn Glu Gln Gly Ile Arg Phe  
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 755 760 765  
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 Gly Asp Gln Ser Ile Ala Ile Gly Thr Gly Asn Val Val Ala Gly Lys  
 805 810 815